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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/585,865

07/11/2006

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EXAMINER

HICKS, CHARLES V

ART UNIT

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2629

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/585,865	Applicant(s) MIYACHI ET AL.	
	Examiner CHARLES HICKS	Art Unit 4175	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>07/11/2006, 03/06/2008</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 3, and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Sumiya (US 6,700,560).

In reference to claim 1, Sumiya teaches a display apparatus (Sumiya Fig. 1),

comprising display elements (Sumiya column 7 lines 57-64)

including a medium injected and sealed between a pair of substrates at least one of which is transparent, the medium changing in magnitude of optical anisotropy upon application of voltage (inherent in a Liquid Crystal Display),

each of the display elements containing colors required to produce a color image display, so as to produce a color image display (Sumiya column 7 lines 61-63),

different voltages being applied to the display elements so as to display the colors required to produce a color image display with an identical gradation (Sumiya column 8 lines 8-18; column 8 lines 22-30).

Claim 3 is rejected as being dependent on rejected claim 1 as discussed above and further, Sumiya teaches wherein the colors required to produce a color image display are three colors of RGB (Sumiya column 7 lines 61-66).

In reference to claim 15, Sumiya teaches a display element in a display apparatus (Sumiya column 7 lines 57-64),

each display element containing colors required to produce a color image display, so as to produce a color image display (Sumiya column 7 lines 61-63),

different voltages being applied to the display elements so as to display the colors required to produce a color image display with an identical gradation (Sumiya column 8 lines 8-18; column 8 lines 22-30),

a medium being injected and sealed between a pair of substrates at least one of which is transparent, the medium changing in magnitude of optical anisotropy upon application of voltage (inherent in a Liquid Crystal Display).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sumiya (US 6,700,560) in view of Uchida (US 6,879,174).

6. Claim 2 is rejected as being dependent on rejected claim 1 as discussed above and further, Sumiya however fails to teach wherein the voltages applied are determined based on a lookup table which associates gradations of an image displayed by the display apparatus with the voltages applied to the display elements.

Uchida teaches wherein the voltages applied are determined based on a lookup table which associates gradations of an image displayed by the display apparatus with the voltages applied to the display elements (Uchida column 2 lines 15-26; all the

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voltage values saved in memory, as a lookup table, are computed using the built-in computational device).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the apparatus of Sumiya with the lookup table of Uchida.

The motivation being a display apparatus with uniformity of gradation voltage for ideal gradation output voltage values (Uchida column 2 lines 20-26).

7. Claims 7 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sumiya (US 6,700,560) in view of Haertling (US 4,636,786).

Claim 7 is rejected as being dependent on rejected claim 1 as discussed above and further, Sumiya however fails to teach wherein the medium has an ordered structure showing cubic symmetry.

Haertling teaches wherein the medium has an ordered structure showing cubic symmetry (Haertling column 2 line 65-column 3 line 6).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the apparatus of Sumiya with the cubic symmetry of Haertling.

The motivation being the combining of prior art elements to use ferroelectric ceramic materials as the medium in a liquid crystal display according to known methods to yield predictable results.

Claim 11 is rejected as being dependent on rejected claim 1 as discussed above and further, Sumiya however fails to teach wherein the medium is comprised by a liquid crystal fine particle dispersion system showing any one of a micelle phase, a reverse micelle phase, a sponge phase, and a cubic phase.

Haertling teaches wherein the medium is comprised by a liquid crystal fine particle (Haertling column 5 lines 43-45) dispersion system showing any one of a micelle phase, a reverse micelle phase, a sponge phase, and a cubic phase (Haertling column 5 lines 43-45; column 2 lines 65-68).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the apparatus of Sumiya with the fine particle dispersion of Haertling.

The motivation being a display device with increased properties of brightness, greater contrast, and improved resolution (Haertling column 5 lines 6-9).

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sumiya (US 6,700,560) in view of Takeuchi (US 2001/0024178).

Claim 8 is rejected as being dependent on rejected claim 1 as discussed above and further, Sumiya however fails to teach wherein the medium is comprised by molecules showing a cubic phase or a smectic D phase.

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Takeuchi teaches wherein the medium is comprised by molecules showing a cubic phase or a smectic D phase (Takeuchi page 8 paragraph 170).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the apparatus of Sumiya with the cubic phase of Takeuchi.

The motivation being the addition of strength, toughness, and durability (Takeuchi page 8 paragraph 170).

9. Claims 4, 6, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sumiya (US 6,700,560) in view of Yamaguchi (US 6,266,109).

Claim 4 is rejected as being dependent on rejected claim 1 as discussed above and further, Sumiya fails to teach wherein the medium exhibits optical isotropy in absence of an electric field and exhibits optical anisotropy under applied voltage.

Yamaguchi teaches wherein the medium exhibits optical isotropy in absence of an electric field and exhibits optical anisotropy under applied voltage (Yamaguchi column 3 lines 21-35).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the apparatus of Sumiya, with the medium exhibiting optical isotropy in absence of an electric field and exhibiting optical anisotropy under applied voltage, of Yamaguchi.

The motivation being a display with high speed optical switching (Yamaguchi column 3 lines 11-14).

Claim 6 is rejected as being dependent on rejected claim 1 as discussed above and further, Sumiya fails to teach wherein the medium is comprised by molecules having an ordered structure less than optical wavelengths either under applied voltage or in absence of applied voltage.

Yamaguchi teaches wherein the medium is comprised by molecules having an ordered structure less than optical wavelengths either under applied voltage or in absence of applied voltage (Yamaguchi column 9 lines 51-58).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the apparatus of Sumiya, with the medium comprised by molecules having an ordered structure less than optical wavelengths either under applied voltage or in absence of applied voltage, of Yamaguchi.

The motivation being a display with high speed optical switching (Yamaguchi column 3 lines 11-14).

Claim 9 is rejected as being dependent on rejected claim 1 as discussed above and further, Sumiya however fails to teach wherein the medium is comprised by a liquid crystal microemulsion.

Yamaguchi teaches wherein the medium is comprised by a liquid crystal microemulsion (Yamaguchi column 5 lines 24-40; column 6 lines 45-64).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the apparatus of Sumiya with the liquid crystal microemulsion of Yamaguchi.

The motivation being to ensure a quick response speed (Yamaguchi column 5 lines 36-38).

10. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sumiya (US 6,700,560) in view of Lipton (US 4,967,268).

Claim 5 is rejected as being dependent on rejected claim 1 as discussed above and further, Sumiya however fails to teach wherein the medium exhibits optical anisotropy in absence of an electric field and exhibits optical isotropy under applied voltage.

Lipton teaches wherein the medium exhibits optical anisotropy in absence of an electric field and exhibits optical isotropy under applied voltage (Lipton column 2 lines 10-27).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the apparatus of Sumiya with the anisotropy in absence of an electric field and optical isotropy under applied voltage, of Lipton.

The motivation being the ability to vary the dynamic range of the shutter (Lipton column 2 line 25-27).

11. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sumiya (US 6,700,560) in view of Lavretovich et al. (US 6,570,632).

Claim 10 is rejected as being dependent on rejected claim 1 as discussed above and further, Sumiya however fails to teach wherein the medium is comprised by a lyotropic liquid crystal showing any one of a micelle phase, a reverse micelle phase, a sponge phase, and a cubic phase.

Lavretovich teaches wherein the medium is comprised by a lyotropic liquid crystal showing any one of a micelle phase, a reverse micelle phase, a sponge phase, and a cubic phase (Lavretovich column 2 lines 1-17; micelle phase).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the apparatus of Sumiya with the lyotropic liquid crystal and micelle phase of Lavretovich.

The motivation being the use of ordered phases in a liquid crystal medium.

12. Claims 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sumiya (US 6,700,560) in view of Applicants Admitted Prior Art (AAPA).

Claim 12 is rejected as being dependent on rejected claim 1 as discussed above and further, Sumiya fails to teach wherein the medium is comprised by a dendrimer.

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Applicants admitted prior art teaches teach wherein the medium is comprised by a dendrimer (AAPA 2; Abstract paragraph 57, the liquid crystal layer contains the bar-shaped liquid crystal molecules and dendrimer or planar discotic liquid crystals).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the apparatus of Sumiya with the dendrimer medium of applicants admitted prior art.

The motivation being to lower the driving voltage (AAPA 2).

Claim 14 is rejected as being dependent on rejected claim 1 as discussed above and further, Sumiya fails to teach wherein the medium is comprised by molecules showing a smectic blue phase.

Applicants admitted prior art teaches teach wherein the medium is comprised by molecules showing a smectic blue phase (AAPA 9; Smectic blue phases are liquid crystalline phases which exhibit both three-dimensional orientational order and smectic positional order).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the apparatus of Sumiya with the smectic blue phase medium of applicants admitted prior art.

The motivation being a display apparatus that combines smectic order with three-dimensional orientation (AAPA 9).

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13. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sumiya (US 6,700,560) in view of Sato et al. (US 2003/0039770).

Claim 13 is rejected as being dependent on rejected claim 1 as discussed above and further, Sumiya however fails to teach wherein the medium is comprised by molecules showing a smectic blue phase.

Sato teaches wherein the medium is comprised of molecules showing a smectic blue phase (Sato page 5 paragraph 44).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the apparatus of Sumiya with the smectic blue phase molecules of Sato.

The motivation being to broaden a temperature range of the display medium (Sato page 5 paragraph 44).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHARLES HICKS whose telephone number is 571-270-7535. The examiner can normally be reached on Monday-Thursday from 7:30 to 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz, can be reached on 571-272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CH

/Richard Hjerpe/
Supervisory Patent Examiner, Art Unit 2629